

Further, specific compounds include the following commercially available compounds: Urethaneacrylate M-1100, M-1200, M-1210 and M-1300 manufactured by Toagosei Co., Ltd., Urethaneacrylate EB210, EB4827, EB6700 and EB220 manufactured by Daicel-UCB Co., Ltd., Uvithane-782, Uvithane-783, Uvithane-788 and Uvithane-893 manufactured by Morton Thiokol Inc., Artresin UN-9000EP, Artresin UN-9200A, Artresin UN-900H, Artresin UN-1255, Artresin UN-5000, Artresin UN-2111A, Artresin UN-2500, Artresin UN-3320HA, Artresin UN-3320HB, Artresin UN-3320HC, Artresin UN-3320HS, Artresin UN-6060P, Artresin UN-6060PTM, Artresin SH-380G, Artresin SH-500 and Artresin SH-9832 manufactured by Negami Chemical Industrial Co., Ltd., NK Oligo U-4H, NK Oligo U-4HA, NK Oligo U-4P, NK Oligo U-4PA, NK Oligo U-4TX, NX Oligo U-4TXA, NE Oligo U-6LHA, NK Oligo U-6LPA-N, NK Oligo U-6LTXA, NK Oligo UA-6ELP, NK Oligo A-6ELH, NK Oligo UA-6ELTX, NK Oligo UA-6PLP, NK Oligo U-6-ELP, NK Oligo U-6ELH, NK Oligo U-8MDA, NK Oligo U-8MD, NK Oligo U-12LMA, NK Oligo U-12LM, NX Oligo U-6HA, NK Oligo U-108A, NK Oligo U-1084A, NK Oligo U-200AX, NK Oligo U-122A, NK Oligo U-340A, NX Oligo U-324A and NK Oligo UA-100 manufactured by Shin-Nakamura Chemical Co., Ltd., AH-600, AT-600, UA-306H, AI-600, UA-101T, UA101I, UA101H, UA-306T, UA-306I, UF-8001 and UF-8003 manufactured by Kyoeisha Chemical Co., Ltd.

Specific examples of monomer of the amide of an unsaturated carboxylic acid with an aliphatic polyamine compound include methylene bisacrylamide, methylene bismethacrylamide, 1,6-hexamethylene bisacrylamide, 1,6-hexamethylene bismethacrylamide, diethylenetriamine trisacrylamide, xylylene bisacrylamide and xylylene bismethacrylamide.

Other preferred examples of the amide monomer include those having a cyclohexylene structure as described in JP-B-54-21726.

As the ethylenically unsaturated compound having a nitrogen atom for use in the present invention, a reaction product of a monoisocyanate or diisocyanate with a partial ester of a polyhydric alcohol as described, for example, in West German Patents 2,064,079, 2,361,041 and 2,822,190 are also advantageously used.

Further, an unsaturated compound containing a thio group which may be a member for constituting a hetero ring, a ureido group, a urethane group, an amino group such as triethanolamino group or triphenylamino group, a thiourea group, an imidazole group, an oxazole group, a thiazole group, an N-phenylglycine group or a photo-oxidizing group such as an ascorbic acid group in the molecular structure thereof is preferably employed. Examples of such a type of compound are described in European Patents 287,818,

353,389 and 384,735. Of these compounds, those containing a tertiary amino group, a ureido group or a urethane group are preferred.

The ethylenically unsaturated compounds having a nitrogen atom may be used individually or as a mixture of two or more thereof. Also, they may be used together with a known unsaturated compound, for example, a monomer of an ester of an unsaturated carboxylic acid with a polyhydric alcohol compound described below.

Specific examples of monomer of the ester of an unsaturated carboxylic acid with an aliphatic polyhydric alcohol compound include an acrylic ester, e.g., ethylene glycol diacrylate, triethylene glycol diacrylate, 1,3-butanediol diacrylate, tetramethylene glycol diacrylate, propylene glycol diacrylate, neopentyl glycol diacrylate, trimethylolpropane triacrylate, trimethylolpropane tri(acryloyloxypropyl) ether, trimethylethane triacrylate, hexanediol diacrylate, 1,4-cyclohexanediol diacrylate, tetraethylene glycol diacrylate, pentaerythritol diacrylate, pentaerythritol triacrylate, pentaerythritol tetraacrylate, dipentaerythritol diacrylate, dipentaerythritol pentaacrylate, dipentaerythritol hexaacrylate, sorbitol triacrylate, sorbitol tetraacrylate, sorbitol pentaacrylate, sorbitol hexaacrylate, tri(acryloyloxyethyl)isocyanurate or